

## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

#### **14 CFR Part 39**

**[Docket No. FAA-2009-0477; Directorate Identifier 2008-NM-191-AD; Amendment 39-16003; AD 2009-18-07]**

**RIN 2120-AA64**

**Airworthiness Directives; Boeing Model 747-100, -100B, -100B SUD, -200B, and -300 Series Airplanes; and Model 747SP and 747SR Series Airplanes**

**AGENCY:** Federal Aviation Administration (FAA), Department of Transportation (DOT).

**ACTION:** Final rule.

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**SUMMARY:** The FAA is superseding an existing airworthiness directive (AD), which applies to certain Boeing Model 747 series airplanes. That AD currently requires repetitive inspections to detect cracks in various areas of the fuselage internal structure, and related investigative/corrective actions if necessary. This new AD requires additional repetitive inspections for cracking of certain fuselage structure, and related investigative/corrective actions if necessary. This AD results from fatigue tests and analysis by Boeing that identified areas of the fuselage where fatigue cracks can occur. We are issuing this AD to prevent the loss of the structural integrity of the fuselage, which could result in rapid depressurization of the airplane.

**DATES:** This AD becomes effective October 1, 2009.

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in the AD as of October 1, 2009.

**ADDRESSES:** For service information identified in this AD, contact Boeing Commercial Airplanes, Attention: Data & Services Management, P.O. Box 3707, MC 2H-65, Seattle, Washington 98124-2207; telephone 206-544-5000, extension 1, fax 206-766-5680; e-mail me.boecom@boeing.com; Internet <https://www.myboeingfleet.com>.

#### **Examining the AD Docket**

You may examine the AD docket on the Internet at <http://www.regulations.gov>; or in person at the Docket Management Facility between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this AD, the regulatory evaluation, any comments received, and other information. The address for the Docket Office (telephone 800-647-5527) is the Document

Management Facility, U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue, SE., Washington, DC 20590.

**FOR FURTHER INFORMATION CONTACT:** Ivan Li, Aerospace Engineer, Airframe Branch, ANM-120S, FAA, Seattle Aircraft Certification Office, 1601 Lind Avenue, SW., Renton, Washington 98057-3356; telephone (425) 917-6437; fax (425) 917-6590.

## **SUPPLEMENTARY INFORMATION:**

### **Discussion**

The FAA issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 to include an AD that supersedes AD 2005-20-30, amendment 39-14327 (70 FR 59252, October 12, 2005). The existing AD applies to certain Boeing Model 747 series airplanes. That NPRM was published in the Federal Register on May 26, 2009 (74 FR 24712). That NPRM proposed to continue to require repetitive inspections to detect cracks in various areas of the fuselage internal structure, and related investigative/corrective actions if necessary. That NPRM also proposed to require additional repetitive inspections for cracking of certain fuselage structure, and related investigative/corrective actions if necessary.

### **Comments**

We provided the public the opportunity to participate in the development of this AD. We have considered the comment that has been received on the NPRM. Boeing concurs with the NPRM.

### **Conclusion**

We have carefully reviewed the available data, including the comment that has been received, and determined that air safety and the public interest require adopting the AD as proposed.

### **Costs of Compliance**

There are about 209 airplanes of the affected design in the worldwide fleet. The following table provides the estimated costs for U.S. operators to comply with this AD. The average labor rate is \$80 per work hour.

**Table - Estimated Costs**

<b>Action</b>	<b>Work hours</b>	<b>Cost per airplane, per inspection cycle</b>	<b>Number of U.S.-registered airplanes</b>	<b>Fleet cost</b>
Inspections (required by AD 2005-20-30)	130	\$10,400	69	\$717,600
Additional inspections in Area 1 (new action)	6	\$480	69	\$33,120
Additional inspections in Area 6 (new action)	1	\$80	69	\$5,520

## **Authority for This Rulemaking**

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, Section 106, describes the authority of the FAA Administrator. Subtitle VII, Aviation Programs, describes in more detail the scope of the Agency's authority.

We are issuing this rulemaking under the authority described in subtitle VII, part A, subpart III, Section 44701, "General requirements." Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

## **Regulatory Findings**

We have determined that this AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that this AD:

- (1) Is not a "significant regulatory action" under Executive Order 12866;
- (2) Is not a "significant rule" under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979); and
- (3) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

We prepared a regulatory evaluation of the estimated costs to comply with this AD and placed it in the AD docket. See the ADDRESSES section for a location to examine the regulatory evaluation.

## **List of Subjects in 14 CFR Part 39**

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

## **Adoption of the Amendment**

Accordingly, under the authority delegated to me by the Administrator, the FAA amends 14 CFR part 39 as follows:

### **PART 39—AIRWORTHINESS DIRECTIVES**

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

#### **§ 39.13 [Amended]**

2. The Federal Aviation Administration (FAA) amends § 39.13 by removing amendment 39-14327 (70 FR 59252, October 12, 2005) and by adding the following new airworthiness directive (AD):



**FAA**  
**Aircraft Certification Service**

# AIRWORTHINESS DIRECTIVE

[www.faa.gov/aircraft/safety/alerts/](http://www.faa.gov/aircraft/safety/alerts/)  
[www.gpoaccess.gov/fr/advanced.html](http://www.gpoaccess.gov/fr/advanced.html)

**2009-18-07 Boeing:** Amendment 39-16003. Docket No. FAA-2009-0477; Directorate Identifier 2008-NM-191-AD.

## Effective Date

- (a) This AD becomes effective October 1, 2009.

## Affected ADs

- (b) This AD supersedes AD 2005-20-30.

## Applicability

- (c) This AD applies to Boeing Model 747-100, 747-100B, 747-100B SUD, 747-200B, 747-300, 747SP, and 747SR series airplanes; certificated in any category; identified in Boeing Service Bulletin 747-53A2349, Revision 3, dated October 2, 2008.

## Subject

- (d) Air Transport Association (ATA) of America Code 53: Fuselage.

## Unsafe Condition

- (e) This AD results from fatigue tests and analysis by Boeing that identified areas of the fuselage where fatigue cracks can occur. We are issuing this AD to prevent the loss of the structural integrity of the fuselage, which could result in rapid depressurization of the airplane.

## Compliance

- (f) You are responsible for having the actions required by this AD performed within the compliance times specified, unless the actions have already been done.

## Restatement of Requirements of AD 2002-10-10 With Revised Service Information (Excluding Upper Deck Floor Beams)

## Repetitive Inspections

- (g) Prior to the accumulation of 22,000 total flight cycles, or within 1,000 flight cycles after June 11, 1993 (the effective date of AD 93-08-12, amendment 39-8559, which was superseded by AD 2002-10-10), whichever occurs later, unless accomplished previously within the last 2,000 flight cycles; and thereafter at intervals not to exceed 3,000 flight cycles: Perform an internal detailed inspection to detect cracks in the areas of the fuselage internal structure specified in paragraphs (g)(1) through (g)(6) of this AD; in accordance with Boeing Service Bulletin 747-53-2349, dated June 27, 1991; Boeing Alert Service Bulletin 747-53A2349, Revision 1, dated October 12, 2000; Boeing Service Bulletin 747-53A2349, Revision 2, dated April 3, 2003; or Boeing Alert Service Bulletin 747-53A2349, Revision 3, dated October 2, 2008. After the effective date of this AD, only Revision 3

of Boeing Alert Service Bulletin 747-53A2349 may be used. Continue doing the inspections until the inspections required by paragraph (j) of this AD are done.

- (1) Section 42 upper lobe frames.
- (2) Section 46 lower lobe frames.
- (3) Section 42 lower lobe frames.
- (4) Main entry door cutouts.
- (5) Section 41 body station 260, 340, and 400 bulkheads.
- (6) Main entry doors.

Note 1: For the purposes of this AD, a detailed inspection is: "An intensive examination of a specific item, installation, or assembly to detect damage, failure, or irregularity. Available lighting is normally supplemented with a direct source of good lighting at an intensity deemed appropriate. Inspection aids such as mirror, magnifying lenses, etc., may be necessary. Surface cleaning and elaborate procedures may be required."

(h) Prior to the accumulation of 25,000 total flight cycles, or within 1,000 flight cycles after June 11, 1993, whichever is later, unless already done within the last 2,000 flight cycles; and thereafter at intervals not to exceed 3,000 flight cycles: Do an internal detailed inspection to detect cracks in the Section 46 upper lobe frames, in accordance with Boeing Service Bulletin 747-53-2349, dated June 27, 1991; Boeing Alert Service Bulletin 747-53A2349, Revision 1, dated October 12, 2000; Boeing Service Bulletin 747-53A2349, Revision 2, dated April 3, 2003; or Boeing Alert Service Bulletin 747-53A2349, Revision 3, dated October 2, 2008. After the effective date of this AD, only Revision 3 of Boeing Alert Service Bulletin 747-53A2349 may be used.

#### **Repair of Cracks Detected During Paragraph (g) or (h) Inspections**

(i) Before further flight, repair any cracks detected during the inspections done per paragraph (g) or (h) of this AD by doing the actions specified in paragraph (i)(1) or (i)(2) of this AD, as applicable.

(1) Repair in accordance with a method approved by the Manager, Seattle Aircraft Certification Office (ACO), FAA; or using a method approved in accordance with paragraph (p) of this AD.

(2) Repair in accordance with Boeing Service Bulletin 747-53A2349, Revision 2, dated April 3, 2003; or Boeing Alert Service Bulletin 747-53A2349, Revision 3, dated October 2, 2008. After the effective date of this AD, only Revision 3 of Boeing Alert Service Bulletin 747-53A2349 may be used. Where either revision of the service bulletin specifies to contact Boeing for repair instructions, repair in accordance with a method approved by the Manager, Seattle ACO; or use a method approved in accordance with paragraph (p) of this AD.

#### **Restatement of Requirements of AD 2005-20-30 With Revised Service Information**

##### **Repetitive Inspections**

(j) Do an internal detailed inspection to detect cracking in the areas of the fuselage internal structure specified in paragraphs (j)(1), (j)(2), and (j)(3) of this AD, and internal and external detailed inspections of the areas specified in paragraphs (j)(4), (j)(5), (j)(6), and (j)(7) of this AD. Do the inspections in accordance with Boeing Service Bulletin 747-53A2349, Revision 2, dated April 3, 2003; or Boeing Alert Service Bulletin 747-53A2349, Revision 3, dated October 2, 2008. After the effective date of this AD, only Revision 3 of Boeing Alert Service Bulletin 747-53A2349 may be used. Do the inspections at the applicable time specified in paragraph (k) of this AD.

Accomplishment of these inspections terminates the requirements of paragraph (g) of this AD.

- (1) Section 42 upper lobe frames.
- (2) Section 46 lower lobe frames.
- (3) Section 42 lower lobe frames.

- (4) Main entry door cutouts.
- (5) Nose wheel well bulkheads, sidewall panels, and station (STA) 360 and 380 floor beams. These areas include Section 41 body station 260, 340, and 400 bulkheads.
- (6) Main entry doors.
- (7) Main electronics bay access door cutout.

(k) Do the inspections required by paragraph (j) of this AD at the applicable time specified in paragraph (k)(1), (k)(2), or (k)(3) of this AD. Repeat the inspections thereafter at intervals not to exceed 3,000 flight cycles.

(1) For airplanes on which the inspections required by paragraphs (g)(1), (g)(2), (g)(3), (g)(4), and (g)(6) of this AD have been done before November 16, 2005 (the effective date of AD 2005-20-30), but the inspections required by paragraphs (j)(5) and (j)(7) of this AD have not been done: Within 3,000 flight cycles since accomplishment of the most recent inspection required by paragraphs (g)(1), (g)(2), (g)(3), (g)(4), and (g)(6) of this AD, except that the inspections specified in paragraphs (j)(5) and (j)(7) of this AD may be done within 3,000 flight cycles since accomplishment of the most recent inspection required by paragraphs (g)(1), (g)(2), (g)(3), (g)(4), and (g)(6) of this AD, or within 1,000 flight cycles after November 16, 2005, whichever is later.

(2) For airplanes on which the inspections required by paragraphs (j)(5) and (j)(7) have been done before November 16, 2005: Within 3,000 flight cycles since accomplishment of the most recent inspection required by paragraphs (j)(5) and (j)(7) of this AD, or within 1,000 flight cycles after November 16, 2005, whichever is later.

(3) For airplanes on which the inspections required by paragraph (g) of this AD have not been done before November 16, 2005: Prior to the accumulation of 22,000 total flight cycles, or within 1,000 flight cycles after November 16, 2005, whichever is later.

### **Repair of Cracks Detected During Paragraph (j) Inspection**

(l) Before further flight, repair any cracking found during any inspection required by paragraph (j) of this AD in accordance with Boeing Service Bulletin 747-53A2349, Revision 2, dated April 3, 2003; or Boeing Alert Service Bulletin 747-53A2349, Revision 3, dated October 2, 2008. After the effective date of this AD, only Revision 3 of Boeing Alert Service Bulletin 747-53A2349 may be used. Where any revision of the service bulletin specifies to contact Boeing for repair instructions, repair in accordance with a method approved by the Manager, Seattle ACO; or use a method approved in accordance with paragraph (p) of this AD.

### **New Requirements of This AD**

#### **Inspections and Repair**

(m) Do initial and repetitive detailed inspections for cracking in the areas specified in Table 1 of this AD using applicable internal and external detailed inspection methods; and repair all cracks, by doing all the applicable actions in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 747-53A2349, Revision 3, dated October 2, 2008, except as required by paragraph (n) of this AD. Do the initial and repetitive inspections at the times specified in paragraph 1.E., "Compliance," of the service bulletin, except as required by paragraph (o) of this AD. Repair all cracks before further flight after detection.

**Table 1 – Additional Inspections**

<b>Inspect the addition portion of area 1 and area 6 as specified in Boeing Alert Service Bulletin 747-53A2349, Revision 3, dated October 2, 2008 (“the service bulletin”) –</b>	<b>For airplanes identified as these groups in the service bulletin –</b>
In Area 1: Fuselage frames at body stations 260-520 in areas where the upper deck floor beams are attached (Figure 11 of the Accomplishments Instructions of the service bulletin).	1 through 7 inclusive
In Area 6: Fuselage frames at body stations 400-500 in areas above the Main Entry Door 1 cutouts, from the upper chord of the upper deck floor beams to Stringer 8 (Figure 12 of the Accomplishment Instructions of the service bulletin).	6 and 7

### **Exceptions to Certain Procedures**

(n) If any crack is found during any inspection required by paragraph (m) of this AD, and Boeing Alert Service Bulletin 747-53A2349, Revision 3, dated October 2, 2008, specifies to contact Boeing for appropriate action: Before further flight, repair the crack using a method approved in accordance with the procedures specified in paragraph (p) of this AD.

(o) Where Boeing Alert Service Bulletin 747-53A2349, Revision 3, dated October 2, 2008, specifies a compliance time after the date on Boeing Alert Service Bulletin 747-53A2349, Revision 3, dated October 2, 2008, this AD requires compliance within the specified compliance time after the effective date of this AD.

### **Alternative Methods of Compliance (AMOCs)**

(p)(1) The Manager, Seattle ACO, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. Send information to ATTN: Ivan Li, Aerospace Engineer, Airframe Branch, ANM-120S, FAA, Seattle Aircraft Certification Office, 1601 Lind Avenue, SW., Renton, Washington 98057-3356; telephone (425) 917-6437; fax (425) 917-6590. Or, e-mail information to 9-ANM-Seattle-ACO-AMOC-Requests@faa.gov.

(2) To request a different method of compliance or a different compliance time for this AD, follow the procedures in 14 CFR 39.19. Before using any approved AMOC on any airplane to which the AMOC applies, notify your principal maintenance inspector (PMI) or principal avionics inspector (PAI), as appropriate, or lacking a principal inspector, your local Flight Standards District Office. The AMOC approval letter must specifically reference this AD.

(3) AMOCs approved previously in accordance with AD 2005-20-30 are approved as AMOCs with the corresponding provisions of this AD.

(4) An AMOC that provides an acceptable level of safety may be used for any repair required by this AD, if it is approved by an Authorized Representative for the Boeing Commercial Airplanes Delegation Option Authorization Organization who has been authorized by the Manager, Seattle ACO, to make those findings. For a repair method to be approved, the repair must meet the certification basis of the airplane, and the approval must specifically refer to this AD.

### **Material Incorporated by Reference**

(q) You must use Boeing Alert Service Bulletin 747-53A2349, Revision 3, dated October 2, 2008, as applicable, to do the actions required by this AD, unless the AD specifies otherwise.

(1) The Director of the Federal Register approved the incorporation by reference of this service information under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) For service information identified in this AD, contact Boeing Commercial Airplanes, Attention: Data & Services Management, P.O. Box 3707, MC 2H-65, Seattle, Washington 98124-2207; telephone 206-544-5000, extension 1, fax 206-766-5680; e-mail [me.boecom@boeing.com](mailto:me.boecom@boeing.com); Internet <https://www.myboeingfleet.com>.

(3) You may review copies of the service information at the FAA, Transport Airplane Directorate, 1601 Lind Avenue, SW., Renton, Washington. For information on the availability of this material at the FAA, call 425-227-1221 or 425-227-1152.

(4) You may also review copies of the service information that is incorporated by reference at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: [http://www.archives.gov/federal\\_register/code\\_of\\_federal\\_regulations/ibr\\_locations.html](http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html).

Issued in Renton, Washington, on August 17, 2009.

Ali Bahrami,  
Manager, Transport Airplane Directorate,  
Aircraft Certification Service.